

(p. 50), *T. stricta* (Endl.), *Struthanthus oerstedii* (Oliver) (p. 72), *Sapranthus nicaraguensis* (Seem.) (p. 84), *Zornia diphylla* var. *sericea* (Moric.) (p. 119), *Hybanthus brevis* (Dowell) (p. 152), *H. riparius* (H.B.K.), *Parsonsia balsamona* (C. & S.) (p. 159), *Ardisia paschalis* (Donn. Sm.) (p. 168), *Nymphoides humboldtianum* (H. B. K.) (p. 172), *Vincetoxicum salvinii* (Hemsl.) (p. 178), *Godmania aesculifolia* (H. B. K.) (p. 200), *Coleosanthus paniculatus* (Mill.) (p. 219).

S. F. BLAKE.

PROCEEDINGS OF THE CLUB.

MEETING OF MARCH 28, 1925

This meeting was held at the Museum Building of the New York Botanical Garden. Dr. R. A. Harper was appointed temporary chairman.

Miss Catharine Dutcher, Apt. 53, 417 W. 118th St., New York, N. Y., was elected to membership in the Club.

The following resignations were accepted by vote of the Club: Mr. G. E. Orphal, 570 Smith Street, Brooklyn, N. Y., Miss E. F. Andrews, 419 East First St., Rome, Georgia.

The Secretary reported that the name of Professor A. D. Selby, a member of the Club of long standing, was unfortunately omitted in the necrology for 1924. Professor Selby was at one time president of the American Phytopathological Society and for nearly 30 years botanist of the Ohio Experiment Station. He died May 7, 1924.

By vote of the Club the treasurer was authorized to reimburse Dr. G. H. Shull for his traveling expenses incurred incident to his lecture March 10, 1925.

Dr. Harper, speaking of the loss by resignation during the past year of two members who served terms as officers of the Club for considerable periods, suggested tentatively the advisability of amending the constitution to the effect that those holding responsible office 3, 4, or 5 years (the length of tenure to be decided) should automatically, in case they move out of town become life members and become exempt from dues.

The scientific part of the program consisted of a talk by Dr. Susan P. Nichols, of Oberlin College, entitled "Some reactions

to wounds in plant cells." Dr. Nichols found that the coarser algae lend themselves admirably to this investigation, the plants being mounted in water and punctured freehand with a steel needle. In *Chaetomorpha melagonium* f. *typica*, after the puncture of a cell, a clear liquid comes out and passes into the water. Within a second or two starch grains, etc. begin to accumulate at the opening, forming a plug, which turns dark in a few minutes and apparently hardens, closing the opening. In two minutes all movements from the cell into the water has usually ceased. By plasmolyzing, it can be demonstrated that in about 45 minutes a new membrane has started to form underneath the base of the plug. In 1½ hours the membrane is completely formed and a new cell wall is gradually deposited. The plug gradually becomes transparent and in a month has disappeared.

In *Nitella* the circulation of the protoplasm with its plastids, makes the results easy to follow. A certain number of plastids, loosened by the needle, rush out into the water, but the other cell contents do not diffuse as in *Chaetomorpha*. The membrane is formed apparently as in *Chaetomorpha*. Rotation of the protoplasm, which may cease immediately at the time of puncturing, it resumed simultaneously very soon after, throughout the internode, with the exception of an area near the wound. The renewed movement increases until the normal rate—1.5–2 seconds per 80 μ —is reached. A mass collects about the wound, which interferes with the movement here, but otherwise the movement is normal 24 hours after wounding. On repuncturing in the same cell after a short interval, 1–2 minutes, the same process is repeated, but the time necessary for the normal movement to be regained is longer. When punctures are frequent but after a longer interval, 10–15 minutes, recovery is more and more rapid, possibly because the available plastids are fewer and so do not hold the wounds open. One internode was punctured 87 times and its final death may not have been from this cause. A new cell wall is formed just as in *Chaetomorpha*.

Other subjects employed in the experiments were *Vaucheria*; *Spirogyra*, which, although used successfully, was difficult to puncture; *Chara*, the cortical cells of which never healed, although the internodal cells did; *Elodea*, the leaf cells of which, although forming a plug, invariably died after 24 hours; *Bryum*, in which not even a plug is formed; and cells of fern prothallia and An-

thoceros, which did not heal.—In the subsequent discussion it was suggested that the process seemed similar to the clotting of blood. As a result of the coagulation, toxic products may be formed which interfere with the life processes. The fact that recovery is more rapid after repeated woundings may be due to the formation of anti-bodies in the cell which neutralize the effect of these toxins.

ARTHUR H. GRAVES,
Secretary.

MEETING OF APRIL 14, 1925

The meeting of this date was held at the American Museum of Natural History.

Three candidates for membership were elected to the Club: Miss Laura Alma Kolk, Brooklyn Botanic Garden; Miss Lilian H. Mandell, 3515 97th Street, Corona, Long Island; Miss Mollie Sobel, 754 Vermont Street, Brooklyn.

The scientific part of the program consisted of an illustrated lecture by Professor M. L. Fernald of Harvard University, entitled "The Floras of the Unglaciated Regions of Eastern Canada and Newfoundland."

Dr. Fernald gave a resumé of a paper which is now in the course of publication, showing by means of lantern slides maps the distribution of many of the plants of the Gaspé Peninsula, the Magdalen Islands and the Long Range of Western Newfoundland. The peculiarity of the flora of these regions is that to a large extent it is identical with, or closely related to the floras of western North America rather than eastern America and the Arctic regions. These areas, centering about the Gulf of St. Lawrence, have a large endemic element in their flora which is likewise more closely related to plants of the Rocky Mts. or of the Pacific slope than to other regions. The areas of Gaspé and the Magdalen Islands, where such plants occur, have been well demonstrated by geological explorations to have escaped the Pleistocene glaciation; and the botanical evidence as well as the topography of the Long Range indicates a similar history for that region, although the geological exploration there has been limited. A review of Pleistocene history in America and in Europe was given, and it was shown that many of the plants

which are common to the Pacific slope of North America and to the Gaspé Peninsula or western Newfoundland are otherwise known only in the Arctic Archipelago which was north of the continental glaciers of America. Similarly, about 70 species, common to unglaciated arctic America and the unglaciated mountains of Gaspé and the mountains of the western United States or adjacent Canada, are known in Europe only in arctic Russia and Nova Zembla or sometimes in limited areas on the Kola Peninsula. These regions lay to the northeast of the great continental ice sheets which in Europe radiated in Pleistocene time from the Scandinavian mountains, and the speaker pointed out that the flora which is made up of these species which outlived Pleistocene glaciation on isolated unglaciated spots may be considered the ancient arctic flora, since it has shown little, if any, inclination since the waning of the Pleistocene glaciers to take possession of the adjacent regions which were covered by continental ice. A younger arctic flora which, during the latest advances of the Glacial Period, reached southern Europe and the mountains of New England and New York, now occupies both unglaciated and glaciated regions to the northward and shows no such conservatism as the species which characterize the mountains of Gaspé and western Newfoundland. A detailed analysis of the situation will soon be published.

ARTHUR H. GRAVES,
Secretary.

NEWS NOTES

Mr. Ellsworth Bethel, who has been Curator of the Department of Natural History for the Colorado State Museum, died suddenly on Sept. 8. He was well known for his work in forestry and at the time of his death was Pathologist for the United States Bureau of Plant Industry. He did a great deal to interest the people of Colorado in Natural History.

Mr. Rafael Toro, after two months of research in the New York Botanical Gardens, has returned to Porto Rico as assistant plant pathologist in the Agricultural Experiment Station at Rio Piedras. Dr. Mel T. Cook will be associated with Mr. Toro in this work.